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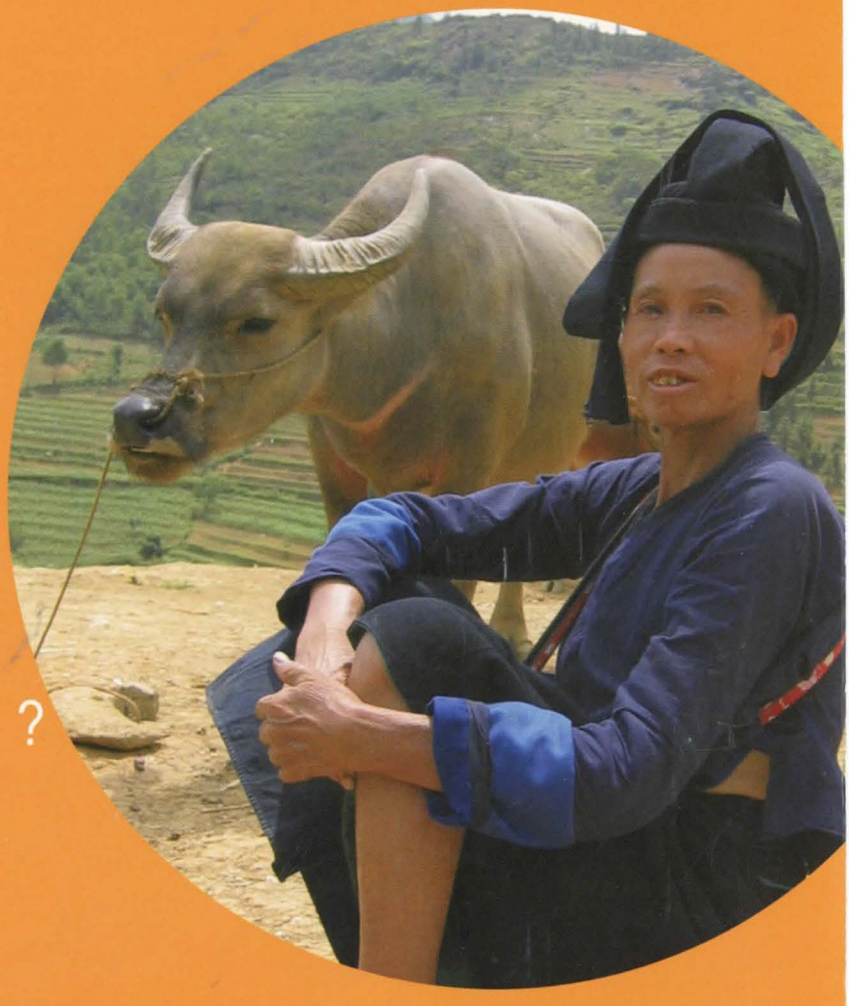

Does control of animal infectious risks offer a new international perspective ?

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QUALITATIVE RISK ASSESSMENT OF THE INTRODUCTION OF H5N1 VIRUS IN ETHIOPIA BY THE COMMERCIAL TRADES

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ABSTRACT

Recent outbreaks of Highly Pathogenic Avian Influenza (HPAI) H5N1 in Sudan, Djibouti and Egypt, have placed Ethiopia at risk of experiencing an outbreak. In May 2006, a qualitative risk assessment was carried out in order to evaluate the risk of introduction and dissemination of the H5N1 virus thought trade in Ethiopia. Data were collected via field mission and interview of experts. Risk assessment process was split in three steps: release, exposure and consequence assessment. The release assessment estimates the likelihood of the virus to be introduced by importation of day-old chick: two export countries Egypt and United Kingdom have confirmed H5N1 infection in poultry farms so the probability of introduction through legal importation from these countries was estimated. Although Sudan and Djibouti experienced outbreaks of H5N1, the probability of introduction by trade across borders was evaluated. The exposure assessment identifies possible pathways leading to exposure of poultry: live birds markets, backyard production, multiplication centre and commercial farms. Consequence assessment estimates the spread of virus, the mortality, the economic effects on markets and the food safety impact. Risk estimation is assessed as null to negligible but it appears clearly that backyard production constitutes the more important risk. Keywords: Risk assessment, HPAI H5N1, Commercial trade, Ethiopia.

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INTRODUCTION

The recent introductions of H5N1 HPAI in East Africa have placed Ethiopia at risk of experiencing an outbreak. Qualitative risk assessment enables decision-makers to estimate the risk of introduction and spread of the virus within Ethiopia. Poultry production sectors have been identified as followed: backyard, commercial farm and governmental farm providing genetic improvement services for backyard farmers. The risk question was to assess the risk of introduction of H5N1 HPAI in Ethiopia via formal and informal importation of poultry between January and May 2006. In this study, we assessed the release risk by day old chick imports and informal trade at the borders; the exposure risk within commercial, governmental farms and markets; and the consequence of introduction on the poultry marketing sector.

MATERIALS AND METHODS

The qualitative risk assessment method used is based on the work done by Zepeda (Zepeda Sein,C.First we have designed a model of poultry products importations and commercial pathways within Ethiopia (Figure 1). For each branch of the model tree we have assessed the risk level as followed. Five different qualifiers were used for each assessment with a direct link to the occurrence probability of the event:

– null: occurrence of the event is not possible;
– negligible: occurrence of the event would be possible only in exceptional circumstances;
– low: occurrence of the event is relatively low, but possible in certain circumstances;
– moderate: occurrence of the event is definitely possible;
– high: the probability of occurrence of the event is large;
– very High: the probability of occurrence of the event is almost certain.

For each assessment, parameters were combined using a table adapted to the one establishes by the French Food Safety Agency (AFSSA, 2004)

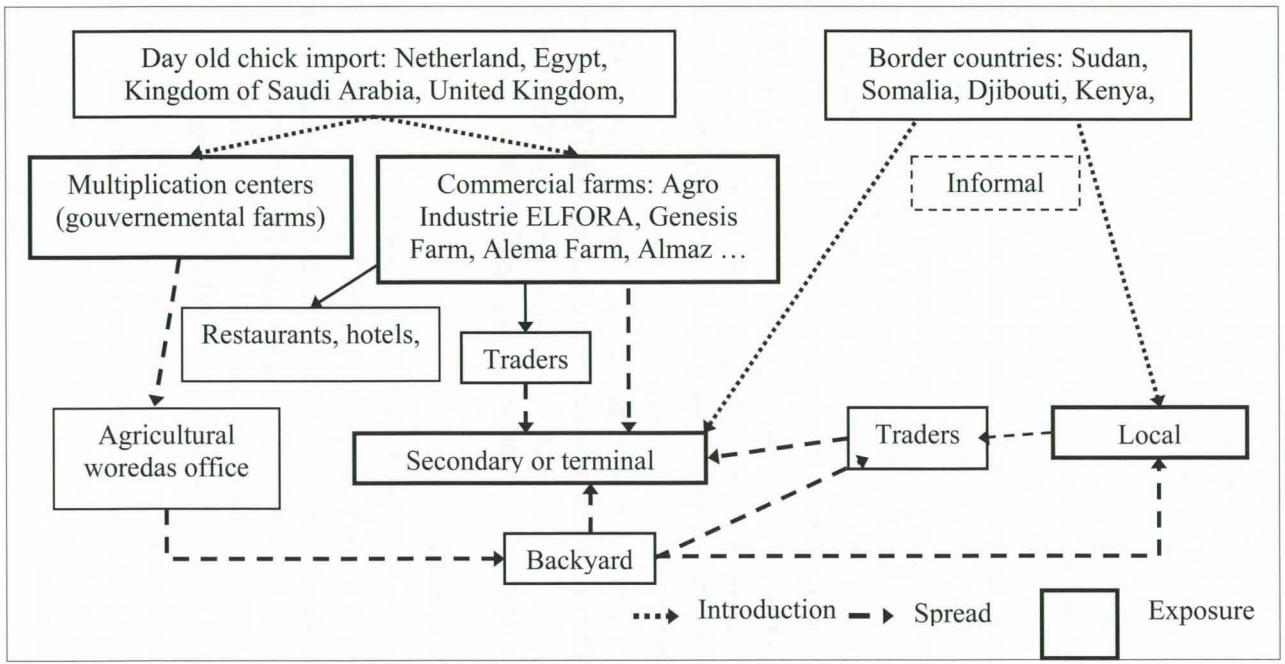

Figure 1. Introduction, spread and exposure.

RESULTS

Release assessment

Imports of day old chick and informal trade with neighbouring countries were identified as a potential release risk. Parameters considered to assess the risk were:1) the presence of the virus in the exporting or neighbour country; 2) the sanitary measures in place in the exporting or neighbour country; 3) the sanitary measures in place in Ethiopia; 4) the capacity of virus survival in the Ethiopia environment; 4) the level of exchange (number and frequency).

We have first assessed the international import release risk. From January to May 2006, Ethiopia imported day old chick from Netherlands, Kingdom of Saudi Arabia, Egypt, United Kingdom and Kenya. The Netherlands, Kingdom of Saudi Arabia, and Kenya were free of the disease during the considered period. So, the release assessment of H5N1 virus via import of day old chick was qualified as null. Even if the presence of H5N1 virus in backyard and commercial farms, was confirmed in Egypt, the release risk via day old chick imports to Ethiopia was qualified as negligible according to the sanitary measures applied in Egypt and Ethiopia. H5N1 virus was detected in United Kingdom in a dead swan only. Therefore, the release risk by day old chick imports from the United Kingdom to Ethiopia was qualified as null to negligible.

Secondly, we have assessed the release risk by informal trade from infected neighbouring countries such as Sudan and Djibouti. Qualifying and combining each parameter we have assessed the release risk by informal trade from both countries as negligible to low.

Exposure assessment

Exposure areas considered were: commercial and governmental farms, local and terminal markets. Exposure parameters were: 1) the transmission; 2) the survival capacity; 3) sanitary and biosecurity measures in place; 4) the number of poultry involved in the exchanges. Qualifying and combining the parameters, market exposure was qualified as low to moderate, commercial farm exposure as negligible and governmental farm exposure as low.

The occurrence for each pathway was assessed by combining release and exposure risks. In commercial and governmental farms the occurrence of an outbreak was determined as null to negligible and in a backyard market as negligible.

Consequence assessment

Consequences identified were: risk of disease spread; poultry mortality rate within village, governmental and commercial farms; economical effect on markets; and food safety impact. The risk of disease spread via genetic improvement program, within and between villages and via movement of traders between markets and villages was assessed as very high. While the likelihood of disease spreading via commercial farm activity was assessed as null to negligible. Considering previous outbreaks of H5N1 HPAI in Africa, poultry mortality rate was assessed as very high. Considering that an outbreak will brought market to a standstill, we have assessed the economical effect for poultry producer as very high. Jennifer Bush (Bush, 2005.) has estimated the impact of an outbreak on the food safety; she has determined that "an avian flu outbreak will not directly affect the food safety of farmers". To referring to her study, we assessed the food safety impact as moderate.

Risk estimation

Combining parameters we estimated the risk of introduction of H5N1 as null to negligible with negligible consequences for commercial sector and low consequences for backyard system.

DISCUSSION AND CONCLUSION

It was not possible to assess the risks associated to illegal trade, but it is an important factor to consider. Cultural practices need as well to be considered. In fact, it appears from the interviews that poultry flow increases during holy day (principally in *Fasika* holiday in April or May), because chickens and eggs are the staple of the national dish: « doro wätt ». So the risk will be more important during these periods.

Through qualitative risk assessment the risk of introduction and spread of H5N1 virus in Ethiopia by commercial trade from January to May 2006 was estimated as null to negligible. Qualitative risk assessment is only a first step. A more accurate risk estimation via quantitative risk assessment needs to be undertaken. Risk assessment is a tool to plan risk management, in this study we can see that the management have to target the backyard sector.

REFERENCES

Zepeda Sein C., 1998. Méthode d'évaluation des risques zoosanitaires lors des échanges internationaux. *In* Séminaire sur la sécurité zoosanitaire des échanges dans les Caraïbes (ed. OIE), 2-17.

AFSSA, 2004. Fièvre Q : Rapport sur l'évaluation des risques pour la santé publique et des outils de gestion des risques en élevage de ruminants. [Online] [03/07/2006] URL: http://www.afssa.fr/ftp/afssa/27623-27624.pdf>

Bush J., 2005. The threat of Avian Flu, Predicted impacts on rural livelihoods in SNNPR (Ethiopia). Avian Flu livelihood impact study, The Food Economy Group